**3GPP TSG-SA5 Meeting #154 *S5-241286***

Changsa, China, 15 April - 19 April 2024

**Source: Samsung, ZTE**

**Title: Store and Forward**

**Document for: Approval**

**Agenda Item: 6.19.15**

# 1 Decision/action requested

***In this box give a very clear / short /concise statement of what is wanted.***

# 2 References

None

# 3 Rationale

This provides the new use case of NTN related with S&F functionality.

# 4 Detailed proposal

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| **First Change** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[x] 3GPP TR 22.865: “Study on satellite access Phase 3”

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| **Second Change** |

# 5. Use Cases

5.1 Store and Forward

5.1.1 Description

The use case and requirements of store and forward functionality in defined in [x]. The Store and Forward Satellite (S&F) operation in a 5G system with satellite access is intended to provide some level of communication service for UEs under satellite coverage with intermittent/temporary satellite connectivity (e.g. when the satellite is not connected via a feeder link or via ISL to the ground network) for delay-tolerant communication service. The concept of “S&F” service is widely used in the fields of delay-tolerant networking and disruption-tolerant networking.

The management of the S&F functionality need to be defined. The limitations on the size/amount of data that can be sent from the UE to the AF (Application Function e.g IoT devices) and vice versa need to be configured. Forwarding priority for the stored data to the ground station or to the UE and data retention period for the exchanged data should be configured. The acknowledgment can be provide for the received messages. The acknowledge policy may dictate that the acknowledgment should not be provided. Whether to acknowledgement of the received data by the satellite could be issued possibly with the additional information about the store and forward including (not limited to)estimated time to deliver the messages need to be configured.

The S&F functionality requires to store the messages, in case of MO (mobile originated message), until the satellite coverage is available and the UE is connected to the network. This is when the stored messages are sent to the UE. Same goes for MT (mobile terminated messages) messages where UE messages are stored until the connection is established with the ground network (gateway) and messages can be delivered to the appropriate AF. Since the stored messages have to be read by the network entity at run time the format and the composition, needed to enforce the S&F delivery policies, of the stored message need to be defined.

* + 1. Potential Requirements

REQ-SNF-REQ-01: The 3GPP management system should enable an authorized MnS consumer to configure the limitations to the size/amount of data that can be sent from the UE to the ground station.

REQ-SNF-REQ-02: The 3GPP management system should enable an authorized MnS consumer to the size/amount of data that can be sent from the ground station to the UE.

Note: The above requirement is not for a specific UE but for all the connected UE to the satellite.

REQ-SNF-REQ-03: The 3GPP management system should enable an authorized MnS consumer to configure the forwarding priority for the stored data to the ground station.

REQ-SNF-REQ-04: The 3GPP management system should enable an authorized MnS consumer to configure the forwarding priority for the stored data to the UE.

Note: The above requirement is not for a specifc UE but for all the connected UE to the satellite.

REQ-SNF-REQ-05: The 3GPP management system should enable an authorized MnS consumer to configure the data retention period.

REQ-SNF-REQ-06: The 3GPP management system should enable an authorized MnS consumer to configure the acknowledgement policy for both MO and MT messages.

REQ-SNF-REQ-07: The 3GPP management system should enable an authorized MnS consumer to configure the estimated time to deliver the messages to the UE.

Note: The above requirement is not for a specifc UE but for all the connected UE to the satellite.

REQ-SNF-REQ-08: The 3GPP management system should enable an authorized MnS consumer to configure the estimated time to deliver the messages to the ground station.

REQ-SNF-REQ-09: The 3GPP management system should enable an authorized MnS consumer to configure the elements of network on the ground to support the S&F functionality of a satellite.

5.1.2 Potential Solutions

5.1.2.1 Solution-x

5.1.2.2 Solution-y

5.1.3 Evaluation of solutions

5.1 Use case B